TRANSFORMING REALITY: AN ARTISTIC EXPLORATION OF INTERACTIVE VIRTUAL ENVIRONMENTS

ANNA NIKOLOVA
Bachelor of Science, New Bulgarian University, 2019

A thesis submitted
in partial fulfilment of the requirements for the degree of

MASTER OF FINE ARTS

in

NEW MEDIA

Department of New Media
University of Lethbridge
LETHBRIDGE, ALBERTA, CANADA

TRANSFORMING REALITY:
AN ARTISTIC EXPLORATION OF
INTERACTIVE VIRTUAL ENVIRONMENTS

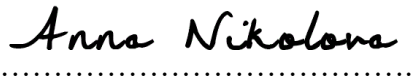
ANNA NIKOLOVA

Date of Defense: July 19th, 2021

Daniela Sirbu	Associate Professor	Ph.D.
Lance Chong	Instructor	M.F.A.
Thesis Co-Supervisors		
Leanne Elias	Associate Professor	M.Ed.
Thesis Examination Committee Member		
Christine Clark	Assistant Professor	M.F.A.
Thesis Examination Committee Member		
Rob Furr	Associate Professor	M.F.A.
External Examiner		
University of Calgary		
Calgary, Alberta		
Douglas MacArthur	Associate Professor	M.F.A.
Chair, Thesis Examination Committee		

AUTHORSHIP

Both the written support paper and thesis project are solely my personal original production, except where academic citations or explicit credits are mentioned in the text and its references as necessary throughout this thesis.

SIGNED  …….

/ Anna Nikolova /

ABSTRACT

My study combines emergent digital art theory and practice with established interaction design theory, converging in virtual environment creation. The artistic exploration aims to investigate interactive environments as an evolving form of narrative to tell a story primarily through the use of visual interactive media. Through free navigation and interactable objects I offer the viewers to follow from a first-person perspective the transformation of the virtual reconstruction of my student dormitory room into a science fiction lab in a parallel world. This venture is further informed by observing and examining the concept of isolation and the near future sub-genre of science fiction as inspiration for world building while considering our relationship with technology and the virtual space, and seeking reconnection with nature. The development of the project aims to address these old concerns in a new interactive manner which puts introspections as an experience that can be accessed by others.

ACKNOWLEDGEMENTS

Throughout the writing of this thesis, I have received much guidance and support.

I would like to express my gratitude to Daniela Sirbu and Lance Chong, in their role as my co-supervisors, and to my committee members, Leanne Elias and Christine Clark for their persistent help, insightful comments and constructive feedback. I am also wholeheartedly grateful to all the faculty and staff members with whom I've had the pleasure to interact with and share meaningful conversations on numerous occasions: Denton Fredrickson, Sandra Cowan, Bryn Hewko, David Clearwater, James Graham, Dana Cooley, Mary Kavanagh, William Smith, Kelly Morris. All their combined efforts have made my graduate journey an incredibly rewarding experience.

I also owe a great debt of gratitude to those who have financially supported my MFA endeavors through scholarships from the University of Lethbridge, including the Graduate Assistantship, the Coca Cola Bursary, the Dean's and Tuition Scholarships from the School of Graduate Studies (SGS), the Abbondànza scholarship from the Faculty of Fine Arts and the International Student Emergency Bursary. Without the generosity of the sponsors, I would not have been able to pursue this degree and come this far in following my dreams.

I would also like to extend my sincere thanks to the international center at the University of Lethbridge for their assistance, which was especially appreciated at the time of a global pandemic. Alongside them, I offer special thanks to the Housing services. My new home throughout my graduate journey, the University townhomes, became an important and invaluable part of my artistic practice. My time spent there will forever remain an incredible experience and I will deeply miss making memories while living on campus.

My heartfelt appreciation goes out as well to everyone in my graduate students' cohort for their continued support, warm encouragement and constant faith in me and my academic work. I am especially indebted to Michelle Sylvestre, Amber Morrison Fox, Miguelzinta Solis, Nicole Riedmueller, Harley Morman and Tyler Stewart.

I am grateful for all the acts of kindness from friends and members of the Lethbridge community during the most challenging times during my studies.

It is a joy for me to thank the Sweetman family for their hospitality and for making me a part of all holiday celebrations that I couldn't share with my own family due to the Coronavirus pandemic.

And lastly, most of all, I owe this success to my family for installing a relentless work ethic in me and profoundly believing in my abilities. My sister Viktoriya and her husband Michael, my mother Nina and my grandmother Anna played a decisive role in motivating me to persevere in the unprecedented times of isolation and loneliness.

Thank you!

TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

“Our actual world is surrounded by an infinity of other possible worlds.”

– Lubomír Doležel

Heterocosmica: Fiction and Possible Worlds (1998)

The MFA thesis project addresses philosophical questions related to science fiction, the virtual and the imagined. The artistic exploration investigates novel forms of visual storytelling that engage the viewer in the story development through virtual interactive environments.

In *Transforming Reality,* the viewer is situated in a small bedroom and starts exploring it with the motive to reveal more about this virtual space. It becomes apparent that certain areas are hotspots – getting close to the pictures on the wall allows the viewer not just to see, but “hear” the places on them, some objects can be picked up, examined, and put back, and a computer screen even prompts to enter some sort of lab with the press of a key. The viewer is teleported to a different place - a science fiction environment that resembles the room they just came from, but is more spacious and highly technologized. Three tall pods with miniature eco-systems stand tall and await the viewer to venture and explore what in this space can be unveiled as well.

The visual story follows the transformation of my room in the student dormitories into a sci-fi lab in an imagined parallel world, and displays a metaphorical connection between the two spaces. It deals with themes of isolation and seeking to reconnect with nature in a near future world that is dominated by technology.

I propose a potential pathway for investigating and understanding the complex

connections between new media theory[1] and narrative theory in the context of artistic expression. New insights may be found in the way real-world references are interpreted as influences and inspiration for virtual world building and how user interaction can be used as a tool for delivering value in non-linear narratives and visual storytelling.

The research-creation process assembles three main aspects: *virtual environments as a reconstruction*, *virtual environments as parallel worlds* and *interaction design in virtual environments*, with main focus on the last two, as they allow more freedom in personal design input and "design imagination"[2].

I draw upon real-world environments to create the first stage of an artistic exploration – a 3D virtual reconstruction of an existent space.

The second stage of the exploration consists of transforming that reconstruction into a science fiction space, imagined, and created with the help of philosophical and visual art references. During this phase I attempt to define and analyze a novel form of the science fiction genre adapted to storytelling in virtual environments. This involves taking a look into its history[3] and speculative devices for fictional and metaphorical world designing[4]. Another concept I observe and develop in this phase is the conjunction of technology and organic life in a near future reality which is neither ideal, nor post – apocalyptic, but rather humanistic (this requires visually making a distinction between the utopian and dystopian worlds, portrayed in popular science fiction).

The third stage addresses design problems when implying a metaphorical connection

---

[1] Lev Manovich, *The Language of New Media* (The MIT Press, 2002).
[2] Anthony Dunne and Fiona Raby, *Speculative Everything. Design, Fiction, and Social Dreaming* (Cambridge, Massachusetts The MIT Press, 2013).
[3] Gary K Wolfe, *The known and the Unknown: The iconography of science fiction* (Ohio: Kent State University Press, 1979).
[4] Dunne and Raby, *Speculative Everything. Design, Fiction, and Social Dreaming*.

between parallel worlds. By implementing interactivity in these visually engaging virtual environments, I situate the viewer in the role of a main character in the nonlinear story told through visual and audio elements, including free navigation, audio cues and interactable objects that allow selection and inspection.

A common pattern in contemporary sci-fi movies and video games[5] is the combination of certain philosophical concepts and distinct visual elements of the specific genre. The broader aesthetic question my project aims to address is how the current isolation relates to a general pattern in contemporary sci-fi ambience. The impact of alienation can be revealed through the exploration of the virtual worlds, which creates not only a visually captivating, but also a deeply meaningful experience for the audience through reflection and provocation[6]. *Transforming Reality* investigates the mindful allurement towards the vast unknown accompanied by an inevitable feeling of loneliness in a science fictional world. Examples of this artistic approach can be seen in multiple forms of art, starting with Mary Shelley's novel *Frankenstein* (1818), thought to be the first work of science fiction, Andy Weir's novel *The Martian* (2011), later adapted by Ridley Scott in the 2015 movie, and Valve's video game *Half-Life 2* (2004).

Coming from an IT and fine arts background, I build upon established approaches to bridge interactive narrative space, remediation of a physical place and virtual space to engage the audience in different modalities of communication, implemented in the virtual experience. Through this strategy, I invite the viewer in my own personal living quarters not just as a guest, but as a protagonist, to establish a more profound connection. I ask the viewer to suspend disbelief and expectations and offer them to teleport themselves into my imagination projected

[5] I am mainly referring to movies and video games, since (in the context of digital art) they are undoubtedly driving the development of technology in pursuit of better visual effects for improved immersion into more elaborate fictional worlds.
[6] Dunne and Raby, *Speculative Everything. Design, Fiction, and Social Dreaming*.

through the science fiction lab.

Will the audience find this journey between my reality and unreality enticing?

Will it be relatable?

2. BACKGROUND

My creative endeavor has been influenced by various types of artworks involving creative story-rich fictional environments mainly in the broader new media field, but also by literature and philosophies surrounding the science fiction genre.

In an attempt to position my perspective through contemporary art and contextualize my artistic research based on current events and historic precedents, I turn to science fiction as a speculative device and its conceptual ability to fulfil emotional and psychological needs based on the social, cultural and political landscape. To quote Raffaella Baccolini, science fiction as a tool "has the potential, through estrangement and cognitive mapping, to move its reader to see the differences of an elsewhere and thus think critically about the reader's own world and possibly act on and change that world".

Storytelling in a virtual manner can be traced as far back as interactive fiction adventures such as Steve Meretzky's *A Mind Forever Voyaging* (1985), predating traversable 3D spaces. In the sci-fi game released by Infocom as a critique of Ronald Raegan's presidency the user explores a dystrophic future from the perspective of a sentient supercomputer running simulations. It is important to point out that around this time, science fiction turns away from nineteen sixties utopia and takes a "dystopian turn"[7] with the emergence of the cyberpunk movement as a reflection of industrialization in a conservative society. Although the game portrays the probable collapse of a society following a senator's plan to impose order, it has a hopeful and somewhat open epilogue. The protagonist - computer has prevented the plan's implementation and has instead helped improve it, earning his own simulated freedom on a space

[7] Raffaella Baccolini, "The Persistence of Hope in Dystopian Science Fiction," *PMLA* 119, no. 3 (2004).

voyage. In its essence the interactive journey allows the player to follow "the life of a singular individual as it is effected by global changes"[8] and is intended to be experienced, rather than played[9]. This thesis project's goal is similar – the two virtual environments are meant to convey my own personal story of isolation and response to the alienation as a result of a global pandemic. The viewers can experience the non-linear story through navigation and placed interactable objects or mementos that help envision emotional moments.

Transforming Reality however also differs from the concept of interactive fiction – given the current technology, I build upon the level of immersion by literally crafting the story-world as a three dimensional environment in a game engine and put the user at the center of the scene through a first person perspective. The relationship between storytelling and the virtual space has been explored to a great extent with recent research suggesting that they doubtlessly enhance each other. Lev Manovich and Janet Murray both point out that a navigable computer-generated space has become a perfect medium to create, explore and expand narratives[10,11] (especially personal ones) and Marie-Laure Ryan refers to it as "the Holy Grail of New Media"[12]. An important influence on my project (even though outside the sci-fi genre) is Ryan and Amy Green's Virtual Reality game *That Dragon, Cancer* (2016) created to intimately share their struggle and grief from losing their son to terminal cancer. As a profoundly emotional and detailed game, it helped me envision how very simple and straightforward point-and-click interactions are ideal for conveying a personal narrative in a story rich environment and most

[8] Joseph Lindell, "A Mind Forever Voyaging," last modified July 10, 2011, http://www.adventureclassicgaming.com/index.php/site/reviews/595/.
[9] Ibid.
[10] Manovich, *The Language of New Media*.
[11] Janet Murray, *Hamlet on the Holodeck, Updated Edition: The Future of Narrative in Cyberspace* (MIT Press, 2017).
[12] Marie-Laure Ryan, "From Narrative Games to Playable Stories: Toward a Poetics of Interactive Narrative," *Storyworlds: A Journal of Narrative Studies* 1 (2009).

notably, how moments and places can be transformed into reimagined almost surreal spaces (for example a ride to the hospital is seen as a racing game and succumbing to grief is portrayed as sinking in an ocean).

Being drawn to the concept of resilience in a troublesome time in conjunction with technology's influence on our lives, I turned to humanistic science fiction as a main philosophical guide. More recent references in which the themes of isolation and humanism are interconnected include Christopher Nolan's *Interstellar* (2014) and Andy Weir's hard sci-fi novel *The Martian* (2011) later adapted in a movie. While the subject matter of these two works – namely space exploration – differs from mine, I find similarities in the way I approach the issue of loneliness and perseverance. The mentioned influences contribute to my artistic practice not only conceptually, but also visually (design-wise), as main references for establishing a distinguishable personal visual style, reflecting the near-future subgenre of science fiction in terms of the interior layout of the environments, props, materials, and lighting.

Considering the growing and evolving fascination with sci-fi, I will seek to address and put to use this speculative genre to further broaden my understanding of it and offer a renewed perspective on its application in virtual environment creation.

3. CONCEPTUAL DEVELOPMENT AND PHILOSOPHICAL FRAMEWORK

The domain of this research lies at the intersection between virtual environments, visual storytelling, and interaction design.

The purpose of my work is to conduct an artistic exploration of virtual environments in regards to both theory and aesthetics. An important objective is to understand medium specific design decisions that aid problem solving in virtual world building and user interactivity development. Such work can be viewed as a contribution to the digital entertainment field.

I aim to combine well-known themes from the science fiction genre – isolation and alienation, to provide insight on their role in virtual world building as part of changing reality and to raise problems about living in spaces dominated by technology and which separate humans from nature. I hope to explore this complex connection and by doing so, to situate my work in this virtual turn, where because of the Coronavirus pandemic we are having to rethink how we relate to the virtual. We are at a point where interactivity and narrative are beginning to inform each other in a whole new way, which in turn is reshaping how we consume digital media, and even what we use it for.

3.1. INSPIRATION FROM ISOLATION

On August 28, 2019 I arrived in Canada for the first time, traveling approximately 9003km from my hometown of Stara Zagora, Bulgaria with a one-way ticket in pursuit of my dreams. I soon discovered how solitary life in graduate school can be when I often found myself tucked away in my campus dormitory room, still hard at work behind a computer screen even after a full day spent at the University. These inevitable secluded moments eventually offered a positive impact on my artistic practice in the form of inspiration for a thesis project. Alongside

the issue of loneliness, I was influenced by gaming culture, horror literature and my fascination with the Science Fiction genre. At that time, I would have never believed that real life would soon resemble my favorite movies, games, and novels. The source of my inspiration drastically shifted, when I was introduced to a whole new meaning of "being alone".

The current reality of isolated living[13] due to the Covid-19 pandemic has led me to consider questions of parallel world building, our relationship with technology and the virtual space, and seeking reconnection with nature. These topics have been a common subject of artistic and philosophical inquiry for years, however, I approach them in an interactive manner that places self-introspections as an experience that can be accessed and evaluated by others.

Being concerned with these topics, I have turned to speculative culture based on other imaginary worlds and alternatives. In an attempt to imagine a reality, separate from our own, I am interested in creating a fictional world not just for entertainment, but also for reflection and provocation. There is a rich theoretical background in multiple fields dealing with the idea of possible / parallel / fictional worlds.

3.2. PARALLEL WORLD BUILDING

Throughout this sub-chapter I will examine the three main elements that have formed my philosophical framework (the science fiction genre, our relationship with technology and the virtual space, and seeking reconnection with nature) and analyze their complex relation to parallel world building and themes of isolation and loneliness. This multiplicity of interconnected perspectives is as interesting to investigate, as it is a "fine mess"[14], which Michael Wilson insists

[13] At the time of writing the thesis paper.
[14] Michael Wilson, "'Another Fine Mess': The Condition of Storytelling in the Digital Age," *Narrative Culture* 1, no. 2 (2014).

is a “condition of storytelling in the digital age”[15].

3.2.1. SPECULATING AND SCIENCE FICTION

Speculating, as explained by Anthony Dunne and Fiona Raby in *Speculative Everything*, is “based on imagination, the ability to literally imagine other worlds and alternatives”[16].

World-creating has long been a pivotal subject of interdisciplinary discourse. Looking back to the earliest and most abstract discussions on the topic, possible world theory addresses “the actual” as opposed to “the unreal”, based on Leibniz’ rationalist philosophy. The main interpretations were centered around the literary text, because language was conceptualized as “the universal medium”[17], and so any analysis would be confined in the “prison house of language”[18], as Fredric Jameson refers to this in his survey of Structuralism and Russian Formalism. Some of the first most elaborate fictional worlds such as the ones in *Gulliver’s Travels* (1726) by Jonathan Swift and *Alice’s Adventures in Wonderland* (1865) by Lewis Carroll, were initially not investigated in regards to possible world theory due to their ambiguous nature. This doctrine was progressively broken when the “possible” was redefined in 20th century analytic philosophy through the development of an alethic system[19] of world-building rules that justifies the postulation of fictional worlds – even if they are non-actual, they can be true in their own domain[20]. This evaluation of formal semantics provided the means for possible

[15] Ibid.
[16] Dunne and Raby, *Speculative Everything. Design, Fiction, and Social Dreaming*.
[17] Alice Bell and Marie-Laure Ryan, *Possible Worlds Theory and Contemporary Narratology*, Frontiers of Narrative, (University of Nebraska Press, 2019).
[18] Fredric Jameson, *The Prison-House of Language: A Critical Account of Structuralism and Russian Formalism*, Princeton Essays in Literature, (Princeton University Press, 1972).
[19] Relating to philosophical concepts such as truth, necessity, possibility.
[20] Craig Garrett, "A Wonderland of Possible Worlds" (Master's thesis,Griffith University, 2014).

world theory and its philosophical values to appear in literary criticism, which lead consequently to a continuingly rising interest towards fictional worlds. Amongst the most appraised world-builders in literature are J. R. R. Tolkien (representing the fantasy genre[21]) with his Middle-earth from *The Hobbit* (1937) and *The Lord of the Rings* (1954) anthologies, and Frank Herbert (representing the sci-fi genre) with his planet Arrakis from the novel *Dune* (1965).

The further adaptation of fictional story-worlds in comics and cinema adds to the complexity of the way they are popularized and consumed. And of course, owing to the most recent technological developments, in video games and Virtual Reality experiences world-building takes on a literal meaning[22] in a synthetic environment. Scholarly interest on the subject of transmedial storytelling is quite recent[23] and often stems from a subjective approach[24]. Henry Jenkins, Provost Professor of Communication, Journalism, Cinematic Arts and Education at the University of Southern California, defines transmedia storytelling as "a process where integral elements of a fiction get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated entertainment experience". Most importantly, this creates the opportunity for each medium to make "its own unique contribution to the unfolding of the story"[25]. Colin Harvey notes that the fantastic and science fiction worlds are of explicit interest to crossmedial expansion owing to their complex construction and diversity in narrative

[21] Even though fantasy narratives have gained scholarly interest, various critics continue to find of little value their style, plot, and character psychology. James Harold, Associate Professor of Philosophy at Mount Holyoke College, argues that in terms of fictional worlds however, their aesthetic value and creative richness are undermined because of the negative response to the literary work.
[22] Dunne and Raby, *Speculative Everything. Design, Fiction, and Social Dreaming*.
[23] Marie-Laure Ryan, "The Aesthetics of Proliferation," in *World Building,* ed. Marta Boni (Amsterdam University Press, 2017).
[24] The academic thinking is tightly linked to fandom.
[25] Henry Jenkins, "Transmedia Storytelling 101," 2007, http://henryjenkins.org/blog/2007/03/transmedia_storytelling_101.html.

structures[26].

Why do we create fictional worlds?

In the fantasy genre, it is worthwhile to review and consider how such works have paved the way for speculative fiction, based on metaphors. In one of Tolkien's stories, *The Fall of Gondolin* (later published as a book in 2018), the iron dragons in the final battle are an allegory of the tanks that Tolkien first witnessed as a second lieutenant during The First World War[27]. Such interpretations are interesting, however remain too abstract and often hypothetical. The fantasy world may be built upon the laws of the actual world and may reflect important concerns, but is essentially self-contained.

Science fiction worlds on the other hand are fundamentally grounded in reality and any speculations in them are governed by the concept of "what if". Furthermore, the genre has evolved significantly dependent on the social and political environment of the time, earning it a more serious scholarly interest. If fantasy is meant for escaping reality, one might say that sci-fi is the opposite. Arthur Clarke, author of *2001: Space Odyssey* (1968), states that "science fiction is often very far from escapism, in fact you might say that science fiction is escape into reality... It's a fiction which does concern itself with real issues: the origin of man; our future. In fact, I can't think of any form of literature which is more concerned with real issues, reality".

From geographical discoveries, deep sea exploration and achievements in medicine, to wars, propaganda and space voyages, the historical development of the genre substantiates Clarke's remark. This concurs how science fiction has been used to make sense of the world while at the same time imagining the future based on important technological developments and

[26] Colin Harvey, *Fantastic Transmedia: Narrative, Play and Memory Across Science Fiction and Fantasy* (Palgrave Macmillan, 2015).
[27] John Garth, *Tolkien and the Great War* (HarperCollins, 2003).

the social and political environment.

Within this framework, the present paper and the MFA thesis project aim as well to identify and investigate a contemporary issue in the world around us (the virtual turn in the past year) through artistic exploration and with the help of speculative devices.

3.2.2. OUR RELATIONSHIP WITH TECHNOLOGY AND THE VIRTUAL SPACE

There has been an interesting shift in our acceptance of technology and attitude towards its ever-evolving presence in our lives. The following survey is in regards to both the science fiction genre and real-world references, in order to imply how for the first time, the lines between the two are really blurred. In our lifetime we have not experienced until now the "dystopian" technology dominated living as a new norm.

Looking back at examples for the anxiety surrounding robotization and digitalization, widely famous movies are *The Terminator* (1984), *The Matrix* (1999), and the more recent *Ex Machina* (2014) – all warning about the dangers of artificial intelligence. Praising and acknowledging of automation's merits is referenced most often in utopian science fiction, which conveys a mostly positive relationship with technology in the future to be unrealistic.

The idealist writer and activist Redfern Jon Barrett argues that dystopian fiction may be entertaining, but its importance as a warning is fading. Moreover, in retrospect no dystopian work of fiction has actually prevented the scenarios it outlines – George Orwell's "*1984* didn't prevent the surveillance state, and *Blade Runner* didn't hinder corporate destruction of our environment"[28].

[28] Eleanor Tremeer, "Why We Need Utopian Fiction Now More Than Ever," 2018, https://io9.gizmodo.com/why-we-need-utopian-fiction-now-more-than-ever-1830260945.

I also believe that as artists, we are not just tasked with warning about the possible dangers of advanced technology, we are also responsible for creating hope and fictional worlds that are not deprived of it with the ultimate goal of increasing their probability.

In Pixar's critically acclaimed animation movie *WALL-E* (2008) the future automated lifestyle has separated humans from nature, making them slaves of both advanced technology and their insatiable appetite. However, in the closing credits of the movie humans and robots are shown working together to restore the Earth and form a society. In *WALL-E* technology isn't really demonized, it's insisted that if used responsibly it can help humankind prosper[29].

In a more recent example – Marvel Studios' fictional country Wakanda – we see a balanced near-future society, which is idealistic and tries to stay separated from the world's oppressions. Barrett refers to this as "ambitopia", which references a work of fiction that can be analyzed as both dystopian and utopian – the idea of a better society in burdensome times.

Despite the unique challenges accompanying disruptive technologies, we are exactly on the cusp of this ambitopian state, because we are exploring the potential of technology being in our service[30]. As Immanuel Kant puts it, we are "social beings" and understandably in a time of isolation, we have turned to the virtual space both for the purpose of school or work productivity and entertainment; and more importantly we have shifted our relationships towards a virtual state.

3.2.3. SEEKING RECONNECTION WITH NATURE

A significantly large portion of the science fiction genre is occupied by biological assumptions and concerns, including themes (or also referred to as "icons") related to the

[29] Sean Mattie, "WALL·E on the Problem of Technology," *Perspectives on Political Science* 43, no. 1 (2014), https://doi.org/https://doi.org/10.1080/10457097.2013.784576.
[30] Jonathan Follett, *Designing for Emerging Technologies* (O'Reilly, 2014), 3.

environment, the biosphere, and the human body[31].

Circling back to the founding work of science fiction, Mary Shelley's *Frankenstein* (1818), it is evident that the genre is rooted in extrapolating the impact of technological advancement on the life sciences. Dr Frankenstein is obsessed with harnessing the power of life over death, but there is no joy in his success. The "monster" is so unnatural and horrifying, it's undesired even by its creator.

This classic story of crossing unspoken boundaries featuring the archetypal "man playing God" continues to be retold and reimagined in modern times. The idea of scientific feats leading to great remorse remains a predominant theme in contemporary science fiction. So much so, that humankind's curiosity and drive are arguably the destroyers of the natural.

In mainstream movies and video games there is an oversaturation of dystopian motifs such as biological warfare, malevolent genetic engineering, and mutations, postapocalyptic destruction, nuclear fallout wastelands and space voyages with an ultimate goal of our relocation due to cataclysmic events. In retrospect, reminiscing Sir Arthur Clarke's humanist writing on futuristic adventures (e.g., *The Sentinel* (1951), *2001: A Space Odyssey* (1968)), and Gene Roddenberry's *Star Trek* (1966), space travel stories in the mid- and late 20th century often featured a more optimistic setting (not necessarily utopian), with science and technology progressively empowering mankind's exploration of the known and unknown Universe. In Carl Sagan's novel *Contact* (1985), which was intended as a screenplay in 1979 and later adapted into the 1997 movie, humanity, even in doubt and not entirely united in the decision, ultimately chooses to take a leap of faith and build the advanced machine from the blueprints sent by extraterrestrial beings in an encoded message.

[31] Farah Mendlesohn and Edward James, *The Cambridge Companion to Science Fiction* (Cambridge University Press, 2003).

The idea of being driven *towards* something has given way to a more probable scenario of being driven *away*.

Undoubtedly science fiction movie making is increasingly linked to profitability, meaning that blockbusters are special visual effects-driven and their narratives – designed to appeal to a global audience[32]. Looking at popular cinema from the past decade, the New Hollywood practices are aimed at "corporate transmedia world-building" [33] (with the stories often further developed in games), lengthy franchises and action-packed remakes of classics.

I stand firm in my belief that the concept of "man playing God" has been overused to the point of cliché and contemporary science fiction artist bear a certain responsibility to avoid it. In my personal artistic practice, I aim to observe to a greater extent the relationship with nature on a more metaphysical level, with a concept of devotion, care, and patience towards nature. I believe this deserves closer investigation and artistic input.

A prominent example for such an approach can be found in Ridley Scott's *Avatar* (2009) where all living beings on the planet Pandora share a complex connection to each other through a living synaptic network - their guiding force and deity Eywa. A less fantastic and more grounded in reality example is in Andy Weir's novel *The Martian* (2011) later adapted also by Ridley Scott into the 2015 movie. The story follows astronaut Mark Watney's struggle to survive after being unintentionally stranded on Mars. Undying hope, relentless humor and rational mind meet to facilitate perseverance in extraordinary circumstances. By chance there are raw potatoes among the scarce resources Watney is left with and he must find a way to grow more on the infertile Martian soil to survive the time before his rescue. After solving countless puzzles, he succeeds.

---

[32] Ibid.

[33] Dan Hassler-Forest, *Science Fiction, Fantasy, and Politics: Transmedia World-Building Beyond Capitalism* (Rowman & Littlefield Publishers, 2016).

The little sprout is more than a future source of nutrition, more than a scientific breakthrough, it is an indisputable beacon of hope and is rewarded with adoration. When the astronaut is finally back home on Earth, he seems to reminisce with a smile that special memory when his gaze stops on a small weed in the ground.

3.3. INTROSPECTIONS AS A VIRTUAL EXPERIENCE

In the initial stages of the thesis project concept development, the science fiction lab in the parallel world was meant to represent an imaginary personal "safe space" where I would "escape" to work in a highly technologized environment. After the global change in the way we relate to the virtual, my idea shifted in a very natural way to presenting this space not as safe, but as inevitable; not where I go to escape reality, but as a new form of reality. This also situates the project much better in a contemporary context.

As previously mentioned, the non-linear story revealed through the environments is a reflection of my own personal introspections. By granting the viewer the ability to navigate in the virtual spaces I have created, and the opportunity to assimilate them as a personal experience, I am also offering the possibility of an unspoken intimate connection. If the immediate understanding of this experience can be summarized as *see what I see*, the further engagement of the viewer aims to prompt *feel what I feel*.

The yearning to invite the audience in one's personal world is nothing new, of course, it is in fact embedded in art making and the essence of storytelling. Be that as it may, the ever-evolving mediums offer different levels of immersion into the story-world. Books as a linear media offer verbal descriptions and movies – a sequence of moving images. Interactive virtual

experiences[34] on the other hand convert the story into a place,[35] a sort of theatrical stage even that lures the viewer to become the actor[36].

In her book *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (2017), Janet Murray gives an example with her student Stephanie Tai's project for her interactive fiction writing class - a first person interactive monologue about insomnia. Unfinished parts of a poem (referred to as stanza) are revealed on the screen. The viewer's role is to observe and analyze the syntactically connecting fragments and to bridge them by clicking on arrows placed on all four margins of the screen. This repetitive maze-like navigation "mimics the tossing and turning…and dead-end thinking of a person unable to fall asleep"[37].

Similarly, the type of interactable objects in each of the two virtual spaces in *Transforming Reality* correspond to the environments' conceptual idea and functionality. As a sign that the dorm room is completely surrendered as no longer a personal space, but a venue for exploring, the viewer can pick up and examine some objects from all angles and "tune-into" the room owner's memories and experiences by "listening" to the posters on the walls. In the science fiction lab there is an animated interactive touch screen monitor. The device is intricate enough to attract the user's attention, but is also something intuitive and familiar so it can be easily used.

[34] Regardless in what form they are presented. An interactive experience could be any navigational digital space – from basic text on the screen which the viewer can hide or reveal, to synthetic environments, explorable from the first- or third-person perspective, or in virtual reality (with a head mounted display).
[35] Murray, *Hamlet on the Holodeck, Updated Edition: The Future of Narrative in Cyberspace*.
[36] Ibid.
[37] Ibid., 81.

4. TRANSFORMING REALITY - PROJECT OVERVIEW

The thesis project *Transforming Reality* in its essence engages the viewer in a short real-time interactive journey through two synthetic game engine environments – the first – a virtual photo-realistic reconstruction of my room in the University townhomes, and the second – its parallel setting in an alternate world, reimagined as a science fiction lab, that can be entered through a portal between the two spaces.

Currently on my front door in the University campus dormitories there is a sign that reads "NO GUESTS PERMITTED" and such is the case since March 2020. Throughout the time of solitude, I spent in my unit these words began to sound like a challenge, but not in a literal way. They fortified my pre-pandemic inspiration for recreating my living space virtually, as close to reality as possible, and encouraged even more my aspiration to invite the audience to an exploratory experience from the first-person perspective that reflects both my personal reality and its further transformation through imagination and creativity.

I aim to encourage everyone with access to the virtual walkthrough to contemplate how and if at all the story-worlds can be perceived as relatable experiences in their own lives. Will the dormitory room stir any memories? Will the parallel world lab resemble their image of a near future work space? Or, considering the native qualities of the medium itself for creating visually engaging stories, does the intentional spatial navigation bring at least participatory pleasure regardless of the content?

Though I have designed the virtual story-world and its interactive elements from personal introspections, the viewer is free to interpret the connections between the two spaces and assemble the bits and pieces into a coherent whole in answer to their own impressions.

4.1. REPRESENTATION OF SPACE

Virtual environments differ from linear structured media and can be analyzed as a novel artistic genre that brings new aesthetics of navigation[38].

The spaces in the project *Transforming Reality* embody a solutionless structure – there is a bridge between them (the portal), but as a whole they essentially have no beginning and no end node. This construct follows the philosophical concept of the rhizome (based on the botanical term) as described by Gilles Deleuze and Félix Guattari to address non-hierarchical multiplicities[39]. All the points of interest are laid out and unlocked from the start and even though they are interconnected, they are independent story elements. The user perceives them at their own pace and regardless of the order no changes occur.

The aesthetic value of the rhizome as a navigational device is specific to such a virtual experience[40] due to the enclosed state of enticed wandering with no absolute clues. The viewer, placed as the protagonist, may choose to explore any of the two spaces in *Transforming Reality* for as long as they require, go back, and observe certain objects more, and rediscover or encounter anew elements that they may have missed the first time. Much like and archeologist, constructing a narrative from historic artifacts[41], the viewer assembles a story world from pieces into a meaningful whole.

The visual story I aim to communicate uses narrative elements in a *mise-en-scène*[42]

---

[38] Manovich, *The Language of New Media*.
[39] As opposed to an organized tree-like system that has a beginning (a root) and one or multiple exit points (branches). A rhizome has to have a minimum of two nodes.
[40] Compared to most video games, where a more linear story structure is implemented and there are goals and objectives.
[41] Ekber Servet Ulaş, "Virtual environment design and storytelling in video games" (Master's thesis, Sabancı University, 2013), CORE.
[42] From French: “stage setting”

arrangement[43] with attention to its key aspects: space, set design, composition, and lighting.

The two interiors are both square shaped spaces that allow the exploration from the first-person perspective to take either a clockwise or counter clockwise direction.

The setting for the virtual dormitory room mimics the already existing arrangement of objects in my room, however the science fiction lab as an imaginary space allowed more freedom for set design and composition with the only requirement to suggest that it's a parallel world[44]. The main storytelling objects are "transformed": the bed, the plant, the paintings, and the computer.

To further emphasize that the spaces are parallel, the time of day in both environments is the same – a late afternoon. After experimenting with alternate options, I discovered that the soft sunset lighting is appropriate for both the room and the lab, because it inherits qualities important to the visual and symbolic design. The sunset can represent closing a chapter at a certain stage to begin something new, it can project serenity to ease the anxiety of isolation. This creative decision also lessens any confusion the viewer might have when entering the lab, since the transition is somewhat fast, and the soft light doesn't interfere with the other lights in the interiors.

Other artistic choices for lighting include adding a lot of emissive lights to put emphasis on important elements and achieve better performance. Particularly for the science fiction lab, the emissive lights are an important design detail suggestive of a near-future work space.

[43] Ulaş, "Virtual environment design and storytelling in video games."
[44] Meaning that a certain amount of resemblance between the spaces must be achieved.

4.1.1. DORM ROOM RECONSTRUCTION

The first of the two traversable environments is the virtual reconstruction of dormitory room in the University of Lethbridge townhomes.

This endeavor to recreate my living space as close to the original as possible (with notable attention to detail especially on the main storytelling elements) can be viewed from two different perspectives, that have collided through the artistic and academic practice.

On one side there is the evident dedication and care that are put in observing, documenting and digital recreating of the space itself with palpable significance accorded to the structures and furnishing. Their accurate representation in the virtual space would make them recognizable by a larger audience, most importantly peers from the university community. Knowing that this attachment to my *temporarily permanent* home for the past two years will undoubtedly turn into nostalgia, I am genuinely motivated to bring awareness to a place that grants a timeless experience and, in a way, to create a time capsule. Everything else, the photos and paintings on the walls, which the viewer can "hear" while navigating, the small plant on the window ledge, the books, and objects on the shelves, all are a way of communicating with the audience about the character and experiences of the person, inhabiting this room.

On the other hand, however, this intricate process of reconstructing suggests a fixation driven by the repetitiveness that comes with isolated living. Certain details attest to how this state aids in the noticing of the smallest imperfections: a crack on the wall, a certain stain on the ceiling, the chipping of the window ledge paint.

In this line of thought, the laptop computer on the desk plays an important part. It can be interpreted as both an instrument for breaking this repetitiveness in various ways, and simultaneously as just another aspect of it. It is figuratively a portal to another world, the

cyberspace, and in the virtual experience becomes a literal bridge between the "real" world and the sci-fi lab. I endeavor to use the metaphorical ability of the computer to transform considering that "the transformative power of the computer is particularly seductive in narrative environments", to note Janet Murray's perspective.

The portal is a very popular widely used in various media fantastic device. In regards of parallel worlds that can be accessed through a "bridge" between them[45], a particularly esteemed example is the work of C.S. Lewis – an appraised novelist and fictional world builder. During his time in Oxford, Lewis was a close friend to Tolkien and they both were members of an informal literary circle known as the Inklings. Throughout his children's novel series, *The Chronicles of Narnia* (1950-1956) Lewis offers a different point of contact between the human world and the fantasy land Narnia. In *The Lion, the Witch and the Wardrobe* (1950), it is the wardrobe, in *Prince Caspian* (1951) – a railway station, in *The Voyage of the Dawn Treader* (1952) – a magical painting and so forth. Lewis' work also reflects his military experience during the war and touches subtly upon the concept of fantasy worlds as a coping mechanism to face reality's oppressions[46].

Even though the parallel world addresses the science fiction genre, since there is currently no scientifically approved evidence of the existence of a multiverse, other worlds (and portals to them) remain a priori a fantastic element in science fiction[47], because they are solely based on

[45] Much like the case with the rabbit hole in Lewis Carroll's *Alice's Adventures in Wonderland* (1865).
[46] In the first book of the series, *The Lion, the Witch and the Wardrobe* (1950), the main protagonists – the Pevensie siblings – are sent away from London to the countryside because of the World War II air raids. In their temporary foster house, they discover through a wardrobe the realm of Narnia, which can be interpreted as a fantastical escape from the harsh historic events taking place around them.
[47] Furthermore, in their initial establishment as literary genres, especially around the 1930s, they were much less distinguishable.

speculation. This observation further validates how fantasy and science fiction inform each other and the line between them can be blurred in the context of speculative thinking.

In accordance with Lewis' symbolism, the protagonist is tasked to suspend disbelief and trust that there are parallel worlds and places or objects where they touch. Lewis' allegory of faith in the possibility of passage additionally requires willing entry into the unknown[48]. I borrow this approach and build upon it by intentionally adding an interactive element to the laptop computer: a key input is expected from the user to enter the parallel world.

4.1.1. SCIENCE-FICTION LAB

The design of the science fiction lab aims to depict an imaginary near-future space parallel to the "real" world (defined as the virtual dormitory room).

As a whole, this environment is a juxtaposition of two ideas: it's a representation of the cyberspace that we currently inhabit as the safest venue that allows ultimate social distancing; and it's furthermore a projection of my personal infatuation with science fiction, in particular when it encompasses an almost mystical convergence of science and nature. In its core, the sci-fi lab is ultimately a container for imagination.

At a first glance, the structures and the setting are somewhat futuristic, compared to a regular works space and especially compared to the dorm room from which the viewer has just teleported. This environment is larger and more spacious, equipped with sophisticated technology, promising perhaps more possibilities to enhance any work process that might be taking place there.

Especially compelling to investigate are the three giant pods that act as sort of terrariums

[48] Sally Bushell, "Narnian portals," *Discovering Literature: 20th century* (2020).

with different miniature eco-systems. The three pods each bear a separate symbolic meaning and their own story to tell, but combined and as a concept represent the collective allurement towards nature in a highly technologized environment.

Growing up in a small city close to the mountains, ever since my early childhood I was fond of spending time in the outdoors. Exploring nature's beauty and complexity and trying to understand it through childish innocence as a part of ourselves, embedded ever since a strong urge in my artistic practice to investigate the blurred boundary between science and art. This approach was further invigorated by my daily walks around the pond in front of the University townhomes, that brought me comfort and inspiration during the lengthy time of quarantine.

The first pod on the left contains a desert terrarium with cactuses, adorned by an arrangement of red sandstones, implying a parable of resilience and perseverance in a harsh environment. The small terrain is also a reference to the astronaut Mark Watney's story of survival on the Red Planet in Andy Weir's novel *The Martian* (2011).

The futuristic container to the right on the other hand holds a woodland bedding with mushrooms and fern plants – a direct reference to the almost fairytale-like forest of my childhood. In addition, the mushrooms encompass my fascination with fungi – neither plants nor animals, but species classified as a separate Kingdom due to their unique characteristics. As much of a scientific wonder, they also offer a versatile exploit in the arts. Their "morbid beauty"[49] and diverse peculiarities are often celebrated by many cultures in various forms from paintings to whole installations. Contemporary artist Anselm Kiefer's *Über Deutschland* 2016 installation in Paris uses fungi "as symbol of decadence, destruction, rebirth, and as source of

[49] Corrado Nai and Vera Mayer, "The beauty and the morbid: fungi as source of inspiration in contemporary art," *Fungal biology and biotechnology* vol. 3, 10 (2016), https://doi.org/10.1186/s40694-016-0028-4.

inspiration for philosophers"[50]. Anne Carnein's sculptures presented at Berlin Art Week in 2016 are pieced from mushrooms, trees, and pieces of the artist's clothes. They provoke contemplation on moments of deception and the cycle of life and death. Austrian artist Sonja Bäumel's trans-disciplinary project *Objects not static and silent but alive and talking* portrays our dynamic life opposed to the seemingly static fungi. She experiments with scientific data and uses her own body[51] by engaging directly with the materials to create living art[52]. It's important to mention that some artist (including Caroline de Roy, Anelia Hotinik, Maurizio Montalti) also address an interdisciplinary dialogue when considering fungi's utilization for bio technologies and sustainable living: their artistic explorations investigate the possibility of fungal structures to be used as a type of, or even a replacement for synthetic materials[53].

Returning to the science fiction lab, the middle pod (the largest of all three) encases tall bright red amaryllis flowers. Their significance to this project lies in the pure act of appreciating nature's beauty. There is a certain mistic symbolism tied to the amaryllis: it is commonly associated with determination, beauty and love owing to the legend of its origins. According to Greek mythology, the maiden Amaryllis stood in front of the shepherd Alteo's house for thirty nights piercing her heart to prove her love. From her blood grew a beautiful flower that helped her win his love in return. The amaryllis' beauty is substantial as it also represents our desire to understand nature and how in its essence it connects us to the divine.

The description of the pods' functionality, the symbolism behind the three miniature ecosystems and how they have been cared for can be found on the interactive transparent display

---

[50] Ibid.
[51] An interesting indirect connection can be made to Stelarc's performances that involve his body often integrated with his own robotic inventions.
[52] Sonja Bäumel, "Sonja Bäumel," www.sonjabaeumel.at.
[53] Nai and Mayer, "The beauty and the morbid: fungi as source of inspiration in contemporary art."

placed in front of them, similar to information plaques in museums. An emphasis is put on how technology is used for sustaining the three terrariums.

Looking to the right of the pods, instead of vivid paintings as seen in the dorm room, there is a sizable spinning hologram of Earth. Acknowledging our world in its planetary form with no set importance to a specific place suggests its perceiving with partial detachment. A real-time digital clock is placed on top of the hologram. As a story element it intentionally includes not just hours and minutes, but also seconds, to visually imply the fluidity of time and its dynamic passing. As a metaphor, the clock is left for free interpretation by the viewer navigating the space and it can resonate with a different meaning: either a time pressure, or maybe that time is a limited resource and must be used wisely. However most importantly, it can be viewed not just with a sense of dread, but with hope and as a reminder that, even in that imaginary space, time hasn't stopped and the world is still spinning.

4.2. REMEDIATED STORYTELLING AND INTERACTION DESIGN

Real-time visualization engines offer a fairly novel form of artistic expression in their role as core software for creating and executing navigable digital spaces. The virtual environments adopt features of earlier media to establish visual narratives and an area of investigation concerned with how people make sense of the visual story[54]. Bolter and Grusin refer to this transformation as *remediation* and explain it as "the way in which one medium is seen by our culture as reforming or improving upon another".[55]

[54] Elena Fell and Natalia Lukianova, "Narrative theory, literature, and new media: narrative minds and virtual worlds," *Social Semiotics* (2019).
[55] Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (The MIT Press, 2000), 59.

A written novel or image is monosensory, because it "speaks to the mind"[56], but through technological development storytelling has awakened an interest in conveying it through multisensory dimensions. As opposed to written narratives, when building interactive visual narratives non-traditional storytelling devices need to be used – spatial elements and set design are of explicit importance. Probably the most important trait of this type of remediated storytelling is the implementation of interaction - instead of being left for passive interpretation, the virtual world can be enhanced through a sense of story co-creation with the viewer. In the chapter *Toward an Interactive Narratology*[57] of her book *Avatars of Story (2006),* Marie-Laurie Ryan explains the different types of interactivity as an "umbrella category" in a virtual environment. Of particular value for the purpose of the artistic exploration is what she refers to as "internal - exploratory interactivity" [58], where the viewer is manifested as a virtual entity in a virtual space. The author also refers to this narrative approach as "go through a portal and discover another world" because of its appeal for an imaginative world setting, namely the two parallel worlds sharing a metaphorical connection – one being a remediation of an existent space and the other reimagined and designed as a science fiction space. This spatio-temporal shift (a story within a story) is referred to as modal embedding[59] by the narrative theorist William Nelles.

The role of interactivity in my artistic practice is to try to answer Marie-Laure Ryan's

[56] Marie-Laure Ryan, "The CounterText Interview: Marie-Laure Ryan," interview by Giuliana Fenech, 2016.
[57] Marie-Laure Ryan, *Avatars Of Story* (University of Minnesota Press, 2006).
[58] Marie-Laure Ryan, "Toward an Interactive Narratology," in *Avatars of Story* (University of Minnesota Press, 2006).
[59] Huaxin Wei, "Analyzing the Game Narrative: Structure and Technique" (Ph.D, Simon Fraser University, 2011).

question: How can a dialogue between mind and machine be put in service of storytelling?[60]

To include meaningful and appropriate interactions in a small-scale exploration such as this one, it's important to focus on the experience of the viewer. Borrowing from John McCarthy and Peter Wright's framework for understanding the user experience[61], I have tailored the project's interactivity to abide the four interconnected core threads[62] of our holistic experiences (the sensual, emotional, compositional, and spatio-temporal threads), as described in their book *Technology as Experience* (2004).

In terms of the sensual thread, concerned with the immediate "sense of situation" and "sensory engagement", the physical navigation is done with the basic computer peripheral components – a keyboard and a mouse. Even though the absorption in the interaction is not entirely immersive (the way it would be with a Virtual Reality headset for example), the experience is available to a wider range of audience. Furthermore, the action of navigation with the basic periphery will feel more familiar than ever in a time when people from many different backgrounds have turned to remote work and have utilized the computer for a longer period of time than their occupation would normally require. To be more engaging and inviting, the virtual experience is given dimension through audio cues and the requirement of a key input from the viewer to continue further in the environment exploration.

I have allocated special attention to the emotional thread, analyzed in correspondence to the particular situation the viewer's placed in. Owing to the nature of my project's story (non-linear, told through visual and audio elements, and does not offer closure), I have chosen a

---

[60] Bronwen Thomas Ruth Page, *New Narratives: Stories and Storytelling in the Digital Age*, ed. David Herman (University of Nebraska Press, 2011), 35-36.
[61] Jennifer Preece, Helen Sharp, and Yvonne Rogers, *Interaction Design: Beyond Human-Computer Interaction*, 4th ed. (Wiley, 2015), 14 - 15.
[62] John McCarthy and Peter Wright, *Technology as Experience* (The MIT Press, 2004).

peripheral level of interactivity where the viewer's actions do not affect the story outcome, but the viewer can relate emotionally[63] to the cues and the transition into the technology dominated science fiction space. As previously mentioned, the virtual walkthrough can evoke different feelings, because it is open for interpretation: it can awaken nostalgia for anyone that has lived in a student dormitory, the paintings of well-known cities can bring back fond memories of trips and so on.

Regarding the compositional thread, concerned with the unfolding of a narrative, it must be taken in consideration that the story told through the environments in the project *Transforming Reality* is not linear, but rather "mosaic" in structure, to quote Marshall McLuhan[64]. The storytelling elements are scattered and independent, but as a whole create the mise-*en-scène* in the room and the lab. Janet Murray suggests that one way to understand this organization in digital storytelling is through the metaphor of the kaleidoscope: the viewer must waive the expectation of a "single angle of perception" and acknowledge the complexity of the canvas that even through multiple iterations creates a coherent pattern[65].

And lastly, acknowledging the spatio-temporal thread, which addresses the meaning of space and time in which the experience takes place[66], all the design decisions for the interactions are either directly or indirectly connected to the reality of isolated living during the Coronavirus pandemic: the choice of the first person perspective to situate the viewer in my own personal space that is marked by time spent in solitude; the computer as both a metaphorical and literal portal to another world, the individual places in the paintings that are transformed into an abstract

[63] Ruth Page, *New Narratives: Stories and Storytelling in the Digital Age*, 37-38.
[64] Elena Lamberty, *Marshall McLuhan's Mosaic: Probing the Literary Origins of Media Studies* (University of Toronto Press, 2012).
[65] Murray, *Hamlet on the Holodeck, Updated Edition: The Future of Narrative in Cyberspace*, 149 - 54.
[66] Preece, Sharp, and Rogers, *Interaction Design: Beyond Human-Computer Interaction*, 14 - 15.

whole in the form of an Earth hologram.

5. METHODOLOGY

5.1. USE OF CURRENT TECHNOLOGY

In order to carry out this complex artistic exploration I situate myself in the role of a "hybrid designer"[67] by addressing multiple fields of practice and utilizing diverse mediums for the cumulative creative process. I examine new media techniques and adopt research-creation methods for designing and building visually engaging interactive virtual environments.

The first and most important task in the prototyping stage of the project development was to define a design concept which sets out visual and functional guidelines[68]. My desire to channel the inspiration from isolation combined with the challenge behind activating the imagination offered me the opportunity to build upon my experience with creative writing and traditional art practice of sketching and collage making.

For the photorealistic visualization of my dormitory room my efforts were channeled towards projecting my spatial observations and experiences related to this space. I wanted to recreate the space surrounding me as close to reality as possible, both in terms of its contents and its visuals, hence the photorealistic visual style. With attention to detail, I documented all the important objects and their materials in order to build them digitally in the later stages of the workflow. I took note how rough the walls and ceiling are, what type of carpet is used, what type of wood are the bed and desk made of, how glossy it is, how to break down the window frame parts, and so on.

To conceptualize the idea of transforming my actual room into an imaginary science

[67] Follett, *Designing for Emerging Technologies*.
[68] Tricia Austin and Richard Doust, *New Media Design* (London: Laurence King Pub., 2007).

fiction space I turned to literary inspiration and gathered a personal collection of references. After laying down a 2D version of the two environments through sketches and matte painting in Adobe Photoshop, as a final step in the prototyping phase, I later created a block out of the space with primitive shapes in Unreal Engine 4 to finalize the layouts of the spaces and the points of interest (the centers of visual interest in the space). This proved particularly important for better visualizing the development of the non-linear story and for finding and eliminating navigational issues.

The actual asset creation took place in 3D modeling software such as Autodesk Maya, followed by texturing and texture baking in Adobe Substance Painter. Both the asset modelling and texturing are done with mainly a modular approach, meaning that most of the elements are broken down to their similar parts so they can be reused in various structural iterations. This is done with processing power in mind in order to allow a smooth virtual experience.

Due to time constraints, I have also utilized some free to use ready assets from Unreal Engine 4 and the Quixel Megascans library - the plants, including their embankment and various decals (full list in Appendix C).

Finally, the world building and interaction implementation is done in Unreal Engine 4. To increase customization of the modular elements and to avoid repetitiveness, certain properties like color, roughness, intensity of wear, are parameterized and can be edited from the instances of the master materials. A first-person camera is mounted to the default Unreal Engine 4 mannequin that enables the movement through a navigational system with some basic controls.

5.2. REAL-TIME VISUALIZATION WITH UNREAL ENGINE 4

Real-time visualization is a relatively young field, evolved through the advancement in

game development technology. The qualities of game engines as a medium incorporating a diversity of assets are progressively enhancing the appeal of virtual environments in many industries – cinema, architecture, education, automotive design, and others. The most recent implementation of virtual environments in game engines can be seen in virtual production for filmmaking. To limit the use of green screens and to help immerse the actors in the plot, real-time environments are projected on screens at the shooting site, allowing the physical and digital worlds to meet, reducing production times, and achieving higher quality lighting and reflections.

In terms of storytelling, game engines such as Unreal Engine 4 offer a renewed perspective on artistic expression compared to traditional media. They enable the literal crafting of visual narratives in an organic and creative manner, owing to their most important property - spatiality[69]. A navigable space, unlike a still image or a movie, can offer a sense of presence by manifesting the viewer as a virtual entity and can facilitate a type of co-experience with the creator when moving through the virtual interiors or landscapes to unveil the story-driving elements.

In *Transforming Reality,* Unreal Engine 4 allows the implementation of different modes of interaction that deliver the information to the viewer in various ways, and as a collection they build an enhanced virtual experience. Sound cues triggered by the user's navigation create a sense of awareness. Picking up and examining objects allow the observation of the creator's space on a more personal level. The virtual teleportation contributes with a fantastic excitement of entering the unknown. In the science fiction lab, the see-through interactive display grants the sense of working in a near future environment. These different types of interactions form both the non-linear story and the unspoken connection between author and viewer.

[69] Murray, *Hamlet on the Holodeck, Updated Edition: The Future of Narrative in Cyberspace*.

6. CONCLUSION

Stories can be powerful instruments of our own personal inner transformation. Added to that, a story told trough a virtual environment experience expands this potential by allowing us to "enact stories, rather than to merely witness them"[70].

Primarily through visual interactive media and by using the digital space as a non-traditional narrative venue, I am able to share my personal story with the audience in search of a deeper, emotional connection. Even though a traditional exhibition will not take place due to the restrictions for in-person gatherings, I have put the media itself to work in aiding my endeavor.

Looking inwards toward my personal interests and practice, I can't help but think of Mary Shelly, a literary artist, intrigued by the rising interest in science and ever evolving technology. A writer, that found herself often in alienation and loneliness, gave the world an entirely new genre in 1818 – science fiction as we understand it today, if we trace its origins according to Gary K. Wolf, the science fiction critic.

My project *Transforming Reality* is my very own Frankenstein monster in a way, built through hard work from bits and pieces of scholarly research, artistic references, cultural depictions, embodying an artistic and technological discovery, with the ultimate desire to be accepted. And just like Victor Frankenstein, in my role as the creator, I see this feat as both captivating and frightening.

[70] Ibid., 160.

BIBLIOGRAPHY

Austin, Tricia, and Richard Doust. *New Media Design.* London: Laurence King Pub., 2007.

Baccolini, Raffaella. "The Persistence of Hope in Dystopian Science Fiction." *PMLA* 119, no. 3 (2004): 518-21.

"Sonja Bäumel." www.sonjabaeumel.at.

Bell, Alice, and Marie-Laure Ryan. *Possible Worlds Theory and Contemporary Narratology.* Frontiers of Narrative. University of Nebraska Press, 2019.

Bushell, Sally. "Narnian Portals." *Discovering Literature: 20th century*. (2020).

Dunne, Anthony, and Fiona Raby. *Speculative Everything. Design, Fiction, and Social Dreaming.* Cambridge, Massachusetts The MIT Press, 2013.

Fell, Elena, and Natalia Lukianova. "Narrative Theory, Literature, and New Media: Narrative Minds and Virtual Worlds." *Social Semiotics* (2019): 1-4.

Follett, Jonathan. *Designing for Emerging Technologies.* O'Reilly, 2014.

Garrett, Craig. "A Wonderland of Possible Worlds." Master's thesis, , Griffith University, 2014.

Garth, John. *Tolkien and the Great War.* HarperCollins, 2003.

Grusin, Jay David Bolter and Richard. *Remediation: Understanding New Media.* The MIT Press, 2000.

Harvey, Colin. *Fantastic Transmedia: Narrative, Play and Memory across Science Fiction and Fantasy.* Palgrave Macmillan, 2015.

Hassler-Forest, Dan. *Science Fiction, Fantasy, and Politics: Transmedia World-Building Beyond Capitalism.* Rowman & Littlefield Publishers, 2016.

Jameson, Fredric. *The Prison-House of Language: A Critical Account of Structuralism and Russian Formalism.* Princeton Essays in Literature. Princeton University Press, 1972.

Jenkins, Henry, "Transmedia Storytelling 101," 2007, http://henryjenkins.org/blog/2007/03/transmedia_storytelling_101.html.

Lamberty, Elena. *Marshall Mcluhan's Mosaic: Probing the Literary Origins of Media Studies.* University of Toronto Press, 2012.

"A Mind Forever Voyaging." Updated July 10, 2011, http://www.adventureclassicgaming.com/index.php/site/reviews/595/.

Manovich, Lev. *The Language of New Media.* The MIT Press, 2002.

Mattie, Sean. "Wall·E on the Problem of Technology." *Perspectives on Political Science* 43, no. 1 (2014): 12-20. https://doi.org/https://doi.org/10.1080/10457097.2013.784576.

McCarthy, John, and Peter Wright. *Technology as Experience.* The MIT Press, 2004.

Mendlesohn, Farah, and Edward James. *The Cambridge Companion to Science Fiction* Cambridge University Press, 2003.

Murray, Janet. *Hamlet on the Holodeck, Updated Edition: The Future of Narrative in Cyberspace.* MIT Press, 2017.

Nai, Corrado, and Vera Mayer. "The Beauty and the Morbid: Fungi as Source of Inspiration in Contemporary Art." *Fungal biology and biotechnology* vol. 3, 10 (2016). https://doi.org/10.1186/s40694-016-0028-4.

Preece, Jennifer, Helen Sharp, and Yvonne Rogers. *Interaction Design: Beyond Human-Computer Interaction.* 4th ed.: Wiley, 2015.

Ruth Page, Bronwen Thomas. *New Narratives: Stories and Storytelling in the Digital Age.* Edited by David Herman. University of Nebraska Press, 2011.

Ryan, Marie-Laure. *Avatars of Story.* University of Minnesota Press, 2006.

———. "Toward an Interactive Narratology." In *Avatars of Story*, 97-125: University of Minnesota Press, 2006.

———. "From Narrative Games to Playable Stories: Toward a Poetics of Interactive Narrative." *Storyworlds: A Journal of Narrative Studies* 1 (2009): 43-59.

———. "The Countertext Interview: Marie-Laure Ryan." By Giuliana Fenech. 2016. 12.

———. "The Aesthetics of Proliferation." In *World Building*, edited by Marta Boni, 31-46: Amsterdam University Press, 2017.

"Why We Need Utopian Fiction Now More Than Ever." 2018, https://io9.gizmodo.com/why-we-need-utopian-fiction-now-more-than-ever-1830260945.

Ulaş, Ekber Servet. "Virtual Environment Design and Storytelling in Video Games." Master's thesis, , Sabancı University, 2013. CORE.

Wei, Huaxin. "Analyzing the Game Narrative: Structure and Technique." Ph.D, , Simon Fraser University, 2011.

Wilson, Michael. "“Another Fine Mess”: The Condition of Storytelling in the Digital Age." *Narrative Culture* 1, no. 2 (2014): 125-44.

Wolfe, Gary K. *The Known and the Unknown: The Iconography of Science Fiction.* Ohio: Kent State University Press, 1979.

Appendix A: Still Image Documentation

Figure 1: Room full view

Figure 2: Room detail 1

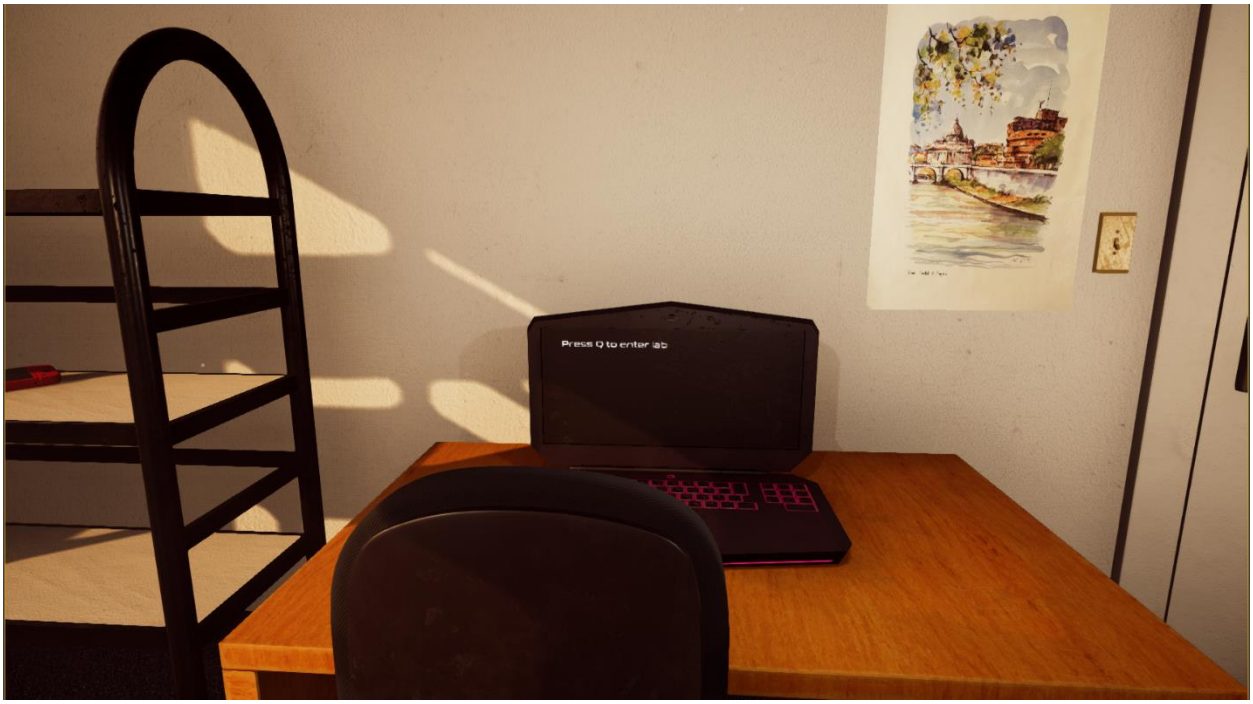


Figure 3: Room detail 2

Figure 4: Sci-fi lab full view

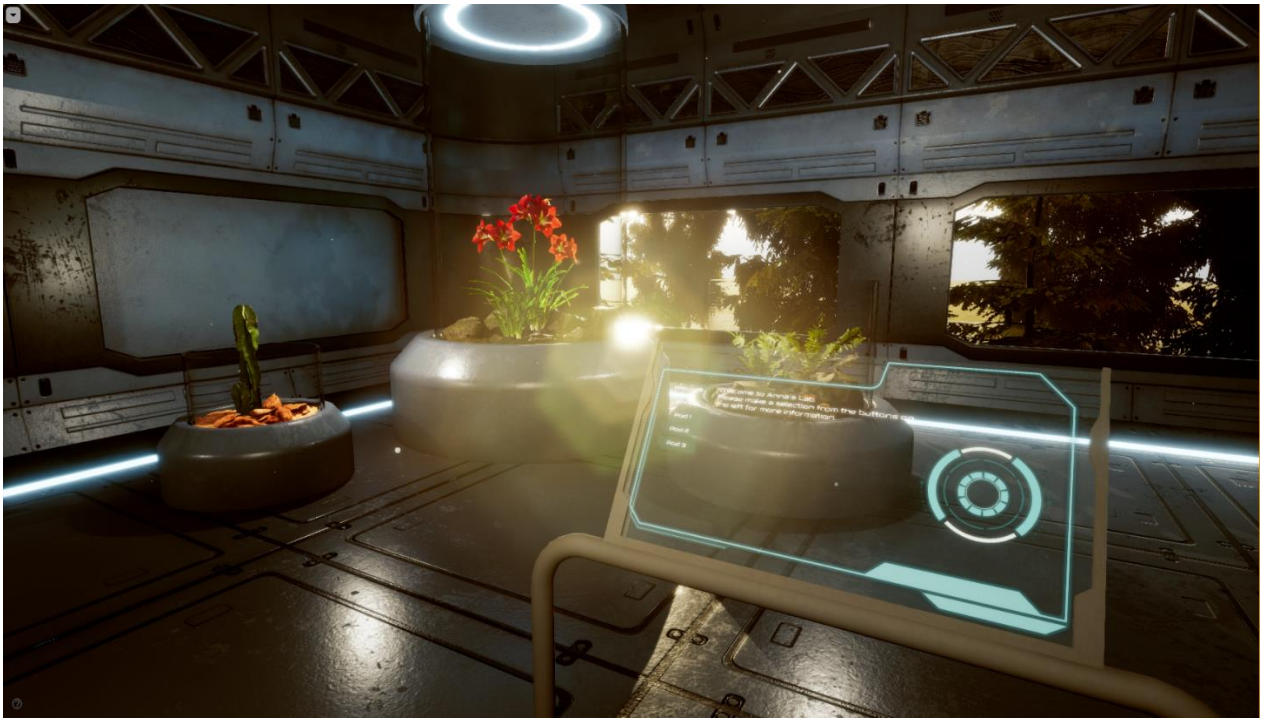


Figure 5: Sci-fi lab detail 1

Figure 6: Sci-fi lab detail 2

Figure 7:Sci-fi lab detail 3

Appendix B: The Story

I'm standing in a small room with nothing much in it, except a bed, a desk, a shelving unit, and some clothes on a hanger. I think… it's a girl's dormitory room.

I look around the small but clean and tidy space. My gaze falls on the larger wall, where hanging on a string of small twinkly lights are family photos with faces bright and smiling at me. On the other walls are posters of places I know too well – New York, Istanbul, Rome. Places that seem so far away now.

While I scan the pictures… I have the feeling I can hear them… I hear the chatter in the places they were taken – I can hear the crowded streets of New York melting into soft bird chirping, reminding me of a song you can only hear in a childhood home. I hear the gentle flow of a rivulet, tucked in the skirts of a mighty mountain. I hear the busy bazaar in Istanbul, a prayer from the near mosque rising in the background...

My eyes drift to the small succulent plant on the window ledge, sitting bright green, almost glowing in comparison to its plain surrounding environment.

A faint buzzing noise from behind me reaches my ears, and I turn around to see that the laptop screen is now turned on. I can't make out any text or images, because of the glare. I move closer to see it says PRESS Q TO ENTER LAB and I do so... The room disappears from my sight and is transformed into a much bigger space.

I have the strangest feeling... like I've traveled in time but stayed in the same place. My surroundings have completely changed, turned into something from a science fiction novel or movie. I recognize the same setting – there is a bed and there is a desk... however they're equipped with the latest technology and gadgets. I can hear the faintest of buzzing from the ceiling lamps and notification sounds coming from the computer. The sets of screens above the desk and the small tv above the bed are flickering with bright lights. I am still, looking in awe at this hidden lab, this place, offering a separate, secret existence.

In front of me are three large glass pods, each encasing a different eco system, leaves shiny with dew, illuminated by the fluorescent lamps above them.

To my right – a hologram of a world clock in the shape of a globe. The seconds are passing by, but there is no date, no countdown. It's just fluid time.

I can only guess where I am, why this place exists and is it actually real.

But I can imagine.

Appendix C: Borrowed Assets

Unreal Engine 4:

UE4 Mannequin
https://www.unrealengine.com/marketplace/en-US/product/ue4-mannequin-mobile

Spruce Forest
https://www.unrealengine.com/marketplace/en-US/product/interactive-spruce-forest?sessionInvalidated=true

Quixel Megascans Library:

Amaryllis
https://quixel.com/megascans/home?search=amaryllis&assetId=sgzkv

Bolete Mushrooms
https://quixel.com/megascans/home?search=bolete&assetId=pdvcB

Cactus
https://quixel.com/megascans/home?search=cacus&assetId=udugdanfa

Cactus Pot
https://quixel.com/megascans/home?search=cacus&assetId=uenkeewfa

Fern
https://quixel.com/megascans/home?search=fern&assetId=rmAsg

Mossy Rocks
https://quixel.com/megascans/home?search=mossy&search=rocks&assetId=tk3vefefa

Rock Sandstone

https://quixel.com/megascans/home?search=rock&search=sandstone&assetId=sapxs

Slightly Damaged Stickers

https://quixel.com/megascans/home?search=stickers&assetId=sgmqpgg

Grass Cut

https://quixel.com/megascans/home?assetId=pjxmK0&search=pjxmK0

Grass Dried

https://quixel.com/megascans/home?assetId=pftjl0&search=pftjl0

Sounds:

https://www.zapsplat.com/